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Implications of Regional Banking Industry on Regional Business Dynamics

Rowland Filbert
rfilbert@iwu.edu

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Abstract:

Entrepreneurship and its job creation capacity play an important social function and this study analyzes how the health of a regional banking industry affects these regional business dynamics. Using a panel dataset covering all 50 states and Washington, DC for the period 1977-2014, several key outcome variables were estimated using a fixed effects and instrumental variable regressions. These included net business formation, net job creation, net job creation among continuers, the job creation rate, and employment growth. These were explained by banking variables like return-on-assets and capital-to-assets as well as regional macroeconomic variables like real personal income and housing price index growth. The findings reflect that a greater bank profitability and hence a healthier regional banking industry is conducive to promoting regional business formation. Moreover, state-level real personal income growth and growth in housing price index are beneficial for promoting regional businesses. This has implications in gaining knowledge on how regional economies are affected by the relationship between banking and entrepreneurship.

Keywords: net business formation, net job creation, return on assets, entrepreneurship, panel data estimation, real personal income growth

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1. Introduction

The ebb and flow of business creation and destruction is an essential component of regional economies. As an influence on these business dynamics, the healthiness of banking industry in a specific region could have potentially meaningful implications in understanding characteristics of business formation and in turn, job creation. While there is a body of literature that has examined the linkages between banking and entrepreneurship (Black and Strahan, 2002; Cavallari, 2015; Francis et al, 2008; Kerr, 2009; Wall, 2004) few studies have examined the effect of the banking industry health on business formation.

As a highly debated topic regionally, as well as nationally, the creation of jobs is directly related to the aforementioned business dynamics. New business formation also fulfills an important social function through its local job creation. Therefore, job creation is undoubtedly an important aspect to consider when analyzing banking influences on emerging businesses. By exploring determinants of net business formation (new business entry minus new business exit) and net job creation (job creation minus job destruction) such as bank profitability, capitalization, and number of establishments, the possible linkage between regional banking industries and regional business industries becomes more apparent. Implications that arise from this analysis include a better understanding of the effect a regional banking industry has on regional firms, in addition to any possible reverse effects that firms might have on the banks. In doing this, the goal to provide meaningful information that will aid in policymaking that benefits both regional banks and regional businesses and in turn, the overall regional economy.
Using a panel dataset covering all 50 states and Washington, DC for the period 1977-2014, this present study examines the impact of regional banking industry health on regional business dynamics.

Previewing the findings, return on assets (ROA), our measure of bank profitability, had positively significant effect on net business formation, net job creation, net job creation among continuing firms and the job creation rate. Using a predicted value of ROA as an instrument to control for potential reverse causality, it was again found that ROA had a positively significant impact on regional entrepreneurship activities. Return on equity (ROE), another measure of bank profitability also had a positive impact across these variables.

The rest of the paper proceeds in the following manner: Section 2 summarizes previous findings related to the impact of banking industries on businesses and entrepreneurship. Section 3 details the data and estimation model. Section 4 presents the results. Finally, Section 5 establishes conclusion.

2. Literature Review

In the pursuit to gain more knowledge of regional banking industry effects on regional business formation and entrepreneurship, several previously published pieces of literature at the intersection of banking and entrepreneurship were analyzed. Recent literature has examined the relationship between finance and growth primarily focusing on the effects of banking deregulation and its impact on entrepreneurship. While all conclude that deregulatory effects had a positive impact on entrepreneurship, each presents different snippets of compelling conclusions. One concluded that while banking deregulation jumpstarted new business formation, there were still many that could not stay afloat, thus leading to a spike in business closures (Kerr, 2009). Using micro-data from the Longitudinal Business Database of the US Census Bureau, Kerr (2009) was able to look at state-wide employment data from 1976 to 1996. Kerr (2009) finished by stating that deregulations did promote long-term entry as well, and these

long-term entrants were able to enter at larger employment sizes upon founding. The study contributed to analysis the intensive and extensive margins of entry as well as compared start-up births and deaths with facility openings and closings by existing firms.

Cavallari (2015) also looked at the implications of entry costs for business formation albeit in a dynamic stochastic general equilibrium model with endogenous entry and exit. The paper states some facts about business formation such as, exit is more volatile than entry and both are more volatile than output and co-movement over a business cycle (Cavallari, 2015). Using annual data provided by the Bureau of Economic Analysis and the Business Dynamic Statistics of the US Census Bureau from 1977 to 2011, the paper presents a model that is sensitive to changes in the composition of entry costs and allows for endogenous exit to aid in matching the consumption and investments in the data with their correlation towards output (Cavallari, 2015).

While also studying the effects of bank mergers on proposed growth due to deregulation Francis et al. (2008) conclude that there was a negative impact associated with the merging of large banks which was only partially offset by smaller consolations. This negative impact is initiated by large bank acquisitions in the short run, but after two years they found that mergers and acquisitions initiated by large in-state acquirers had a positive impact on new business formation. In addition, consolidations among small-to-medium banks also had a positive impact on the rate of new business formation (Francis et al, 2008).

Black and Strahan using data from 1970-1996, looked at the importance of banks to small business and again found that branching and interstate banking reform fostered a competition and consolidation in the banking industry that helped entrepreneurship (2002). They also studied data for all states except Delaware and South Dakota from 1976-1994 looking at the number of

new incorporations, personal income growth, and bank productivity among other variables. Challenging the Black-Strahan model, an alternate study explains that the model does not account for political and regional influences toward states deciding whether or not to deregulate banks and its subsequent impact (Wall, 2004). This might imply that not all regions experienced the same type of growth during this period of deregulation.

This provides an opportunity to further delve into the regional dynamics of both the banking and business industries to determine which characteristics might lead to (and to what magnitude) the result of positive or negative growth.

3. Data and Empirical Model

The panel dataset is composed of data collected from 1977-2014 over all 50 states and the District of Columbia. State-level business entry and exit data is from the US Census Bureau's Business Dynamic Database.[1] Data on banking variables is from FDIC's state-level banking industry database. State-level macroeconomic data, such as real GDP and real personal income, is from the US Bureau of Economic Analysis. Unemployment data is sourced from the US Bureau of Labor Statistics and the housing price index is from the US Federal Housing Finance Agency. Utilizing this data, the study analyzes two key outcome variables (net business formation and net job creation) and how regional banking and macroeconomic conditions influence regional business dynamics.

[1] The BDS is a public use data set of annual aggregate statistics describing different facets of entrepreneurship such as establishment openings and closings, firm startups, and job creation and destruction by firm size and age across states.

3.1. Data

Net business formation is the difference between new business entry minus business exit. Net job creation is the difference between new jobs created and jobs destroyed in a state by these businesses. Banks profitability is measured by return-on-assets (ROA) defined as net income divided by total assets, capital-to-assets is banks total equity capital as a share of total assets. Table 1 shows the average values for each state for net business formation, net job creation, ROA, and capital-to-assets, respectively. As for average net business formation, the states with the highest include California, Texas, and Florida while the states with the lowest are District of Columbia, Rhode Island, and West Virginia. In addition, California, Texas, and Florida had the highest values of average net job creation, while Wyoming, Vermont, and Rhode Island had the lowest. To provide a glance at the data, I find that Nevada, South Dakota, and Delaware had the highest average values of bank profitability over 1977-2014, whereas the District of Columbia, Connecticut, and New York had the lowest values. Alaska, Delaware, and Nevada had the highest capital-to-asset ratios, while Massachusetts, New York, and New Jersey had the lowest ratios.

[Table 1 here]

Table 2 next shows the summary statistics for the variables included in our model. The variables that are included to determine net business formation are return on assets (ROA), the capital-to-asset ratio, real personal income growth, the growth rate in housing price index (HPI), population, and establishments. Population and establishments have the greatest standard deviations while ROA has the largest range.

[Table 2 here]

Graphs 1 and 2 display how bank profitability is in correlation with both net business formation and net job creation, respectively. In both cases, the correlation coefficients are positively significant with net business formation at 0.1993 and net job creation at 0.2048, respectively.

[Graph 1 here]

[Graph 2 here]

3.2. Econometric Model and Results

The following fixed-effects estimation model is used.

$$\text{Net business formation} = a_0 + a_1\log(\text{Establishments}) + a_2\log(\text{ROA}) + a_3\log(\text{Total equity capital-to-assets}) + a_4\log(\text{Real personal income growth}) + a_5\log(\text{HPI growth}) + a_6\log(\text{Population}) \quad (1)$$

Differences in taxes and production create unobserved variation across states. This variation promotes heterogeneity. Unobserved heterogeneity across states are captured by state fixed-effects (state dummies), and unobserved events over time like institutional changes in banking regulation, entrepreneurial environment or improvements in technology are captured by time fixed-effects (year dummies). All variables are run with one-year lagged values to account for the fact that there is a time-lag in regional banking health being reflected on regional business dynamics.

Before proceeding with the results, we tested for panel unit roots on the aforementioned variables. The unit root results using the Im et al. (2003), Levin et al. (2002) statistics are presented in Table 3 below. All variables reject the null hypothesis of presence of a unit root indicating that they are stationary.

[Table 3 here]

As one of the key outcome variables, net business formation was analyzed using the six explanatory variables mentioned above. To test the hypothesis that banking health plays a role in new business formation, we ran a fixed-effects regression using these same variables. Regression 1 in Table 3 shows that a 1 percent rise in ROA significantly increases net business formation by 0.04 percent, illustrating the positive effect of bank health on regional business dynamics. Regression 1 further shows that the number of establishments and the capital-to-asset ratio had negative effects on net business formation. Real personal income growth was shown to have the greatest positive impact of any variable as a one percent rise in this income leads to a 1.75 percent increase in net business formation. The growth rate in housing prices had a positively significant impact in which a 1 percent change in HPI led to a 0.29 percent increase in net business formation. In addition, all variables were significant at the 99 percent confidence interval except capital-to-asset which was only at the 90 percent confidence interval.

Regression 2 shows the results for the other key outcome variable, net job creation, which had slightly different results than its counterpart. Return on assets, the key variable measuring regional banking health, was significant and positive. A 1 percent increase in ROA led to a 0.3 percent increase in net job creation. The number of establishments again had a negative effect, but the capital-to-asset ratio did not. The capital-to-asset ratio was not significant, as its p-value was greater than 0.1. Real personal income growth for a second time produced the highest increase in net job creation with a 1 percent rise leading to a 2.1 percent increase. It was followed closely by population as it led to an increase in net job creation. Growth rates in HPI also had a significant positive impact with a 1 percent change leading to a 0.2 percent increase in net job creation.

We are also interested in net job creation from existing firms, so we ran a regression to determine the effect of these variables on this form of job creation in regression 3. Both real personal income growth and ROA had positive, significant impacts on net job creation by continuers. A 1 percent increase in real personal income growth led to a 2.3 percent increase in net job creation by continuers while 1 percent increase in ROA led to a 0.32 percent increase in this type of job creation. Additionally, a 1 percent change in the growth of housing prices led to a 0.27 percent increase. The effects were quite similar to ones for simple net job creation as the capital-to-asset ratio was insignificant, establishments led to a decrease and real personal income growth led to the largest increase in net job creation among continuers. Additionally, the coefficient values for each variable are larger than those for net job creation meaning the variables have a greater effect (positive or negative) on net job creation continuers.

After analyzing job creation and job creation continuers, we turn our focus to the job creation rate. The job creation rate is the percentage change in job created from one year to the next in a state. Four out of the six variables tested (establishments, capital-to-asset, growth rate in HPI, and population) were insignificant while the other two (real personal income growth and ROA) were not only significant but had a positively significant impact on the job creation rate. A 1 percent increase in ROA led to a 0.25 percent increase in the job creation rate. Real personal income growth again had a positively significant effect with one percent increase in this variable leading to a 0.2 percent rise of the job creation rate.

Lastly, we ran a regression using the identical independent variables to explore their effects on employment growth in regression 5. The results show that none of the variables are significant to employment growth at the 90 percent confidence interval. [2]

[2] Instead of real personal income growth, we also used state-level real GDP growth. Results remain largely unchanged. A one percent increase in real GDP growth led to a 0.95 percent increase in net business formation, a

[Table 4 here]

In summary, most, if not all, of the variables selected have either a positive or negative effect on net business formation, net job creation, net job creation continuers, and the job creation rate, but are not significant at all for employment growth. The variables included explain the most variance in net job creation continuers with almost 25 percent of the variance being due to the variables. ROA, our measure of bank profits, is positively significant in four out of the five regressions. Across all regressions, real personal income seemed to have not only the largest effect, but it was also a positive one. In contrast, the number of establishments consistently had a negative impact over all regressions indicating that a higher number of existing businesses are a deterrent to new business entry. Capital-to-asset ratio, a measure of banks financial strength and ability to withstand unforeseen financial shocks is found to be insignificant in affecting regional business dynamics. The positively significant effect of both state-level real personal income growth and growth in housing prices indicates that net business formation and net job creation are procyclical to regional macroeconomic fluctuations. Population is positively significant in three of the five regressions implying a greater population and hence a larger-sized market is conducive to promote regional entrepreneurial activities.[3]

3.3 Instrumental variable regressions

We consider potential reverse causality i.e. if regional business conditions had an influence on bank profits. To this end, we use a two-stage simultaneous equation instrumental

1.43 percent increase in net job creation, a 1.77 percent increase in net job creation among continuers, and a 0.16 percent increase in the job creation rate. Detailed results available upon request.

[3] Using a random effects model, results remained largely unchanged. ROA is again positively significant in four of five equations. Detailed results available upon request.

variable analysis. As previously stated, net business formation is estimated using equation 1. Return on assets is our measure of bank profitability as well as a key variable in determining net business formation. ROA is explained by the following equation:

$$\text{Log(ROA)} = b_0 + b_1\log(\text{Total equity capital-to-assets}) + b_2\log(\text{Industry size}) + b_3\log(\text{Overhead Costs}) + b_4\log(\text{Funding costs}) + b_5\log(\text{Liquidity risks}) + b_6\log(\text{Credit risks}) + b_7\log(\text{Bank diversification}) + b_8\log(\text{Deposit growth}) + b_9\log(\text{Real personal income growth}) + b_{10}\log(\text{HPI growth}) + b_{11}\log(\text{Unemployment rates}) + b_{12}(\text{Net business formation}). \quad (2)$$

Overhead costs are non-interest expenses divided by assets, whereas funding costs are interest expenses divided by total deposits. Liquidity risks are calculated by first adding cash and investment securities then dividing by total assets. Credit risks are found by dividing provision for loan and lease losses by total income. Lastly, Diversification is non-interest income divided by total income. We then substituted equation 1 into equation 2 to obtain the first-stage estimation equation:

$$\text{ROA} = c_0 + c_1\log(\text{Total equity capital-to-assets}) + c_2\log(\text{Industry size}) + c_3\log(\text{Overhead Costs}) + c_4\log(\text{Funding costs}) + c_5\log(\text{Liquidity risks}) + c_6\log(\text{Credit risks}) + c_7\log(\text{Bank diversification}) + c_8\log(\text{Deposit growth}) + c_9\log(\text{Real personal income growth}) + c_{10}\log(\text{HPI growth}) + c_{11}\log(\text{Unemployment rates}) + c_{12}\log(\text{Establishments}) + c_{13}\log(\text{Population}) \quad (3)$$

After this, we obtain the predicted or estimated values of ROA (ROAHAT) after estimating equation 3. Then the predicted value of ROA is used as an instrument for ROA in estimating equation 1, the second stage estimation. Equation (1) is estimated as a panel fixed effects instrumental variable regression. This was done to control for reverse causality in the analysis, which is the effect of business formation on banking health. Using this instrument, ROA again had a statistically significant impact on net business formation as a 1 percent increase in ROA leads to 0.064 percent increase in net business formation. Additionally, real personal income

growth and HPI growth were positively significant as a 1 percent increase in each lead to 1.07 percent and 0.34 percent increases respectively in net business formation. As for net job creation, a 1 percent increase in ROA gave a 0.068 percent increase. The HPI growth and real personal income growth coefficients were both significant and positive. A 1 percent increase in HPI growth led to a 0.36 percent increase in net job creation, whereas a 1 percent increase in real personal income growth led to a 1.60 percent increase. Net job creation among continuers showed many of the same findings as net job creation. ROA, real personal income growth, and HPI growth were again positively significant. One percent increases in the following variables cause 0.077 percent, 1.98 percent, and 0.41 percent respective increases in job creation among continuers. The key measure of bank profitability, ROA, is also positive and significant after analyzing the job creation rate regression. A 1 percent increase in ROA leads to a 0.68 percent increase in the job creation rate. Lastly, the regression regarding the independent variables' impact on employment growth showed that none of the variable significantly impacted this type of growth. Overall, the instrumental variable regression results are consistent with the fixed effects results presented earlier in section 3.2.

4. Additional Analyses

4.1 Using ROE as a measure of bank profitability

To gain a better understanding of the relationship between regional banking health and regional business formation, we analyzed another measure of bank profitability called return on equity or ROE. ROE is measured as the ratio of net income to total equity capital. We found that ROE was significant and positive in four out of the five regressions. A 1 percent increase in ROE leads to a 0.044 percent increase in net business formation, a 0.030 percent increase in net job

creation, a 0.030 percent increase in net job creation continuers, and a 0.24 percent increase in the job creation rate. The other control variables had their usual signs and statistical significance.

4.2 Impact on firms of different size

We analyzed the impact of ROA on net business formation and net job creation across firms of different size. The US BDS categorizes firms according to the number of employees they have. These range as follows: 1-4, 5-9, 10-19, 20-49, 50-99, 100-249, 250-499, 500-999, 1000-2499, 2500-4999, 5000-9999, and 10000+ employees.[4] It was found that ROA had positively significant effect on net business formation in the three smallest size firms as well as the five largest firm categories. This suggests that ROA has the greatest impact on the smallest and largest firms, but little to no impact on middle-sized firms. As for net job creation, ROA had the largest impacts on firms with less than 249 employees. All cohorts under 249 employees were positively significant at the 95 percent confidence interval. This suggests that a healthier banking industry is most conducive towards job creation by small and medium-sized enterprises.

4.3 Impact on firms across age

BDS also classifies firms according the number of years in business i.e. their age. To look at the impact on firms across age, we analyzed the effect of ROA on net business formation and net job creation on brand new start-ups and firms at age 1, 2, 3, 4, 5, 6-10, 11-15, 16-20, 21-25, and 26+ years. ROA has a positively significant effect on net business formation in start-ups and at age 1, 5 and 6-10. Net job creation is also significantly affected by ROA in start-ups and the 1,

[4] Typically, firms with less than 50 employees are considered small firms; firm with 50-500 employees as medium-sized ones and those with more than 500 employees as large firms.

2, 4, 6-10, 11-15, 16-20, and 21-25 age categories. In both cases, it is encouraging that ROA has a positive significant impact in 0 and 1 age categories. This illustrates that the benefits of healthier banking industry are most accentuated on new firms.

4.4 Using interaction term

To analysis what type of states are most impacted by the relationship between bank profitability and entrepreneurship, we interacted the state-specific mean values of personal income growth with the log of ROA. [5]

$$\text{Net business formation} = a_0 + a_1\log(\text{Establishments}) + a_2\,[\text{Mean log(Real personal income growth)}*(\log(\text{ROA})] + a_3\log(\text{Total equity capital-to-assets}) + a_4\log(\text{HPI growth}) + a_5\log(\text{Population}) \quad (4)$$

The results in Table 8 show that the interaction term between average personal income growth and log of ROA is positively significant; indicating the influence of bank profitability on net business formation is bolstered in states with higher economic growth.

[Table 8 here]

5. Conclusion

Due to a relatively small selection of literature on the relationship between regional banking and regional business formation, the present study provides a deeper dissection of the impact of banking industry health on regional entrepreneurship. While analyzing the effects of regional banking on regional business formation, we have discovered that bank profitability, as measured by ROA, is positively significant on new business formation and net job creation.

[5] Since the estimation model includes state fixed-effects we do not include the two variables separately along with the interaction terms in the estimation.

Using instrumental variable regression to consider reverse causality, ROA remains positively significant in influencing the different measures of regional entrepreneurial activities. We also found ROE was positively significant as an alternate measure of banking health. Looking at firms of different size and age, we found that ROA has the most impact on small firms, new start-ups and relatively newer firms, but not as much impact on established middle-sized firms.

These findings reflect that a healthier regional banking industry is conducive to promoting regional entrepreneurial activities and their consequent job creation capacity. This fulfills an important social function as the availability of jobs increases. Other variables such as the growth rate in real personal income and HPI growth were also found to have positively significant impacts. These findings capture procyclical effects of state-level macroeconomic conditions and suggest that these conditions are a positive influence on regional business formation.

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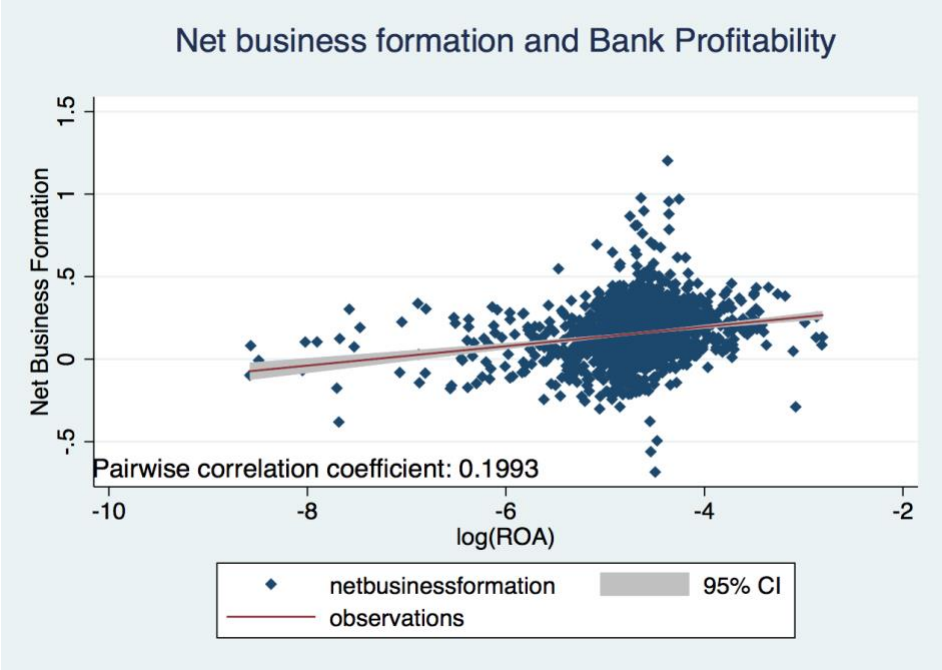
Graph 1. Correlation between net business formation and bank profitability



Graph 2. Correlation between net job creation and bank profitability

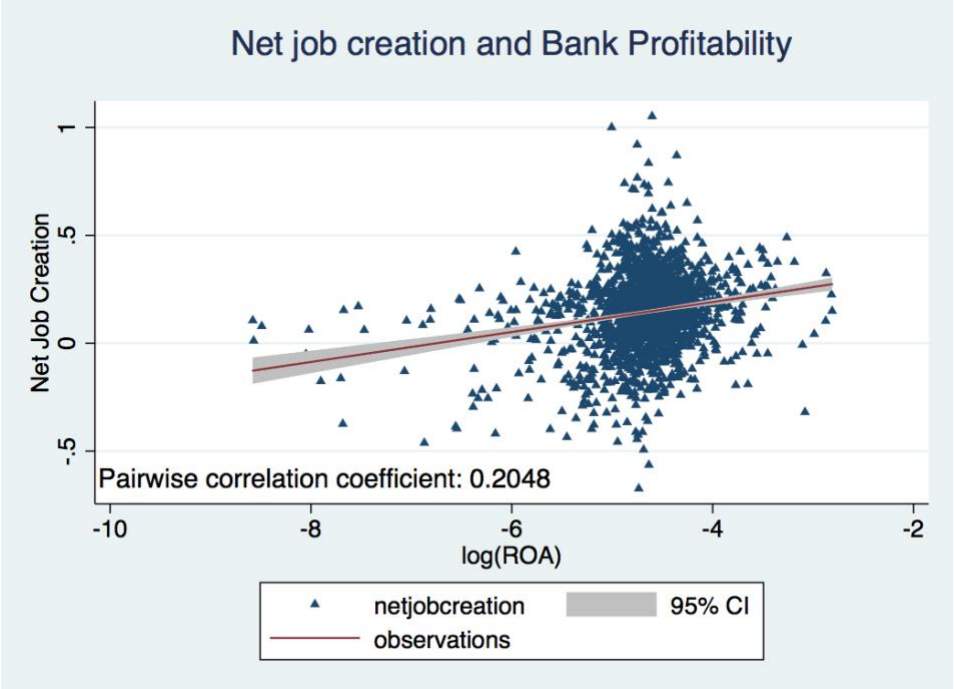


Table 1. Averages of Net Business Formation, Net Job Creation, Return on Assets, and Capital to Asset Ratio

	Net Business Formation	Net Job Creation	ROA	Capital-to-Assets
Alabama	1118.211	21520.760	0.844	9.543
Alaska	325.053	4729.316	1.033	12.443
Arizona	2432.605	47791.180	0.634	8.282
Arkansas	737.132	15606.470	0.986	9.262
California	12584.530	227490.800	0.760	8.528
Colorado	2541.105	40585.390	0.887	8.109
Connecticut	801.026	15606.080	0.572	8.207
Delaware	347.790	5614.000	1.547	11.842
District of Columbia	223.684	6242.605	0.512	8.453
Florida	8756.605	141035.900	0.664	8.406
Georgia	3410.500	62507.870	0.969	9.529
Hawaii	413.053	7493.947	1.018	9.001
Idaho	660.658	9504.605	0.802	8.746
Illinois	2937.790	53950.710	0.690	7.792
Indiana	1410.263	30759.870	0.947	8.637
Iowa	501.816	16451.630	1.016	9.008
Kansas	669.684	16164.500	0.955	9.168
Kentucky	982.790	21771.760	0.984	8.763
Louisiana	1075.000	22077.530	0.861	8.933
Maine	481.500	6796.974	0.999	8.918
Maryland	1832.711	33230.390	0.762	8.370
Massachusetts	1713.316	38243.050	0.728	6.987
Michigan	1976.500	36217.050	0.827	8.394
Minnesota	1832.816	40659.450	1.007	8.072
Mississippi	583.290	11985.260	0.993	8.927
Missouri	1608.553	31702.500	0.915	8.309
Montana	472.868	6112.631	1.087	8.819
Nebraska	492.711	11582.240	1.102	8.896
Nevada	1241.632	24568.950	2.343	11.722
New Hampshire	537.868	9521.315	1.046	9.715
New Jersey	2335.053	41126.320	0.761	7.605
New Mexico	587.526	10335.530	0.798	8.397
New York	4285.290	77519.840	0.671	7.504
North Carolina	3233.237	53506.470	0.938	7.998
North Dakota	254.868	6130.526	1.143	8.960

Ohio	1977.053	46975.610	1.028	7.853
Oklahoma	1011.342	20357.030	0.892	8.527
Oregon	1587.895	25045.820	1.041	9.266
Pennsylvania	2674.842	50857.950	0.894	8.120
Rhode Island	229.947	4195.342	0.722	9.030
South Carolina	1467.816	25063.790	0.789	8.402
South Dakota	281.790	5959.842	1.787	9.761
Tennessee	1662.289	36991.790	0.830	8.888
Texas	8151.763	177139.200	0.790	8.222
Utah	1236.500	22561.710	1.136	9.059
Vermont	259.842	3939.500	0.957	7.747
Virginia	2971.684	53763.050	1.041	8.817
Washington	2802.816	44847.630	0.743	8.585
West Virginia	237.658	4332.553	1.039	9.379
Wisconsin	1423.105	32386.760	0.875	8.577
Wyoming	275.579	3396.684	1.252	8.842

Author's calculations based on data from US Census Bureau's Business dynamic statistics and the FDIC databases.

Table 2. Summary table of variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Net business formation	1938	0.147	0.161	-0.684	1.202
Net job creation	1938	0.131	0.190	-0.674	1.052
Net job creation continuing firms	1938	0.095	0.252	-1.108	1.289
log(ROA)	1834	-4.662	0.527	-8.579	-2.810
log(Capital-to-Assets)	1938	-2.462	0.255	-4.601	-1.411
Δlog(Real Personal Income)	1887	0.022	0.027	-0.170	0.172
Δlog(HPI)	1887	0.040	0.067	-0.766	0.578
log(Population)	1938	14.974	1.031	12.893	17.474
log(Establishments)	1938	11.163	0.972	8.952	13.571

Table 3. Panel Unit Root Test

Variables	Levin, Lin and Chu t	Prob	Im, Pesaran and Shin W-stat	Prob
Log(ROA)	-2.774	0.003	-7.274	0.000
Log(Capital-to-assets)	-2.390	0.008	-3.702	0.000
Log(Population)	-7.821	0.000	-5.519	0.000
Log(Establishments)	-11.166	0.000	-2.619	0.004
Personal income growth	-12.064	0.000	-16.947	0.000
Growth rate in HPI	-7.179	0.000	-15.577	0.000
Net business formation	-4.758	0.000	-11.283	0.000
Net job creation	-16.355	0.000	-17.083	0.000
Net job creation continuing firms	-21.232	0.000	-20.227	0.000
Job creation rate	-7.701	0.000	-6.184	0.000
Employment growth	-31.965	0.000	-45.109	0.000

Table 4. Fixed effects results

	Net Business Formation	Net Job Creation	Net Job Creation by Continuers	Job Creation Rate	Employment Growth
log(Establishments)	-0.541***	-0.623***	-0.692***	-1.846	-0.410
	(-3.97)	(-6.86)	(-5.11)	(-0.76)	(-0.92)
log(ROA)	0.044***	0.032***	0.032***	0.253**	0.009
	(5.21)	(4.15)	(3.88)	(2.66)	(0.12)
log(Capital-to-Assets)	-0.042*	0.011	0.011	-0.040	-0.074
	(-1.80)	(0.49)	(0.42)	(-0.11)	(-0.33)
Δlog(Real Personal Income)	1.745***	2.100***	2.341***	20.132***	-1.378
	(4.08)	(4.89)	(5.86)	(5.79)	(-0.75)
Δlog(HPI)	0.291***	0.203***	0.271***	0.926	0.664
	(3.32)	(2.89)	(3.13)	(1.45)	(1.02)
log(Population)	0.359***	0.365***	0.440***	-1.345	0.194
	(2.97)	(4.50)	(3.42)	(-0.71)	(0.52)
Constant	0.873	1.799***	1.421	60.967***	1.388
	(1.24)	(3.39)	(1.65)	(4.56)	(0.49)
N	1732	1732	1732	1732	1732
R-sq.	0.607	0.608	0.620	0.738	0.002
Number of states	51	51	51	51	51

Terms in brackets denote z-stats based on robust standard errors clustered in states. *, **, *** indicated significance at the 10%, 5%, 1% percent level. Bold coefficients denote statistically significant ones.

Table 5**.** Instrumental variable results

	(1) Net Business Formation	(2) Net Job Creation	(3) Net Job Creation by Continuers	(4) Job Creation Rate	(5) Employment Growth
log(ROA)	0.064***	0.068***	0.077***	0.676***	-0.178*
	(5.23)	(4.10)	(3.39)	(2.73)	(-1.65)
log(Establishments)	0.761***	0.026	-0.382***	3.192*	0.275
	(6.25)	(0.33)	(-3.30)	(1.65)	(0.54)
log(Capital-to-Asset)	-0.029	-0.002	-0.016	-0.319	0.268
	(-1.31)	(-0.07)	(-0.51)	(-0.73)	(1.54)
Δlog(Real Personal Income)	1.072***	1.601***	1.975***	12.139***	0.650
	(4.45)	(3.33)	(2.87)	(2.79)	(0.37)
Δlog(HPI)	0.342***	0.359***	0.405***	1.892*	0.210
	(2.87)	(2.85)	(2.79)	(1.88)	(0.35)
log(Population)	-0.650***	-0.149**	0.178	-5.448***	-0.252
	(-5.96)	(-2.02)	(1.54)	(-3.50)	(-0.58)
Constant	1.610**	2.418***	2.146**	69.249***	0.550
	(2.19)	(3.93)	(2.16)	(4.60)	(0.16)
N	1767	1767	1767	1767	1767
R-sq.	0.576	0.584	0.614	0.015	0.002
Number of states	51	51	51	51	51

Terms in brackets denote z-stats based on robust standard errors clustered in states. *, **, *** indicated significance at the 10%, 5%, 1% percent level. Bold coefficients denote statistically significant ones.

Table 6. Fixed effects results using ROE as measure of bank profits

	(1) Net Business Formation	(2) Net Job Creation	(3) Net Job Creation by Continuers	(4) Job Creation Rate	(5) Employment Growth
log(Establishments)	-0.541***	-0.632***	-0.701***	-1.894	-0.395
	(-3.99)	(-6.89)	(-5.17)	(-0.78)	(-0.88)
log(ROE)	0.044***	0.030***	0.030***	0.242**	0.013
	(5.20)	(4.02)	(3.86)	(2.60)	(0.17)
Δlog(Real Personal Income)	1.745***	2.099***	2.340***	20.129***	-1.377
	(4.08)	(4.87)	(5.85)	(5.79)	(-0.75)
Δlog(HPI)	0.291***	0.205***	0.274***	0.939	0.661
	(3.32)	(2.93)	(3.15)	(1.47)	(1.02)
log(Population)	0.361***	0.388***	0.464***	-1.228	0.158
	(3.03)	(4.74)	(3.73)	(-0.67)	(0.44)
Constant	0.852	1.437***	1.053	59.152***	1.941
	(1.28)	(2.72)	(1.33)	(4.57)	(1.00)
N	1732	1732	1732	1732	1732
R-sq.	0.607	0.607	0.619	0.738	0.002
Number of states	51	51	51	51	51

Terms in brackets denote z-stats based on robust standard errors clustered in states. *, **, *** indicated significance at the 10%, 5%, 1% percent level. Bold coefficients denote statistically significant ones.

Table 7: Fixed effects results of firms across size and age

Firm Size	Net business formation results											
	Size: 1 to 4	Size: 5 to 9	Size: 10 to 19	Size: 20 to 49	Size: 50 to 99	Size: 100 to 249	Size: 250 to 499	Size: 500 to 999	Size: 1000 to 2499	Size: 2500 to 4999	Size: 5000 to 9999	Size: 10000+
Log(ROA)	0.047***	0.038***	0.043***	0 .023	0 .025	0.042*	-0.003	0.059**	0.060**	0.067**	0.063**	0.040***
	(5.32)	(4.18)	(3.27)	(1.52)	(1.07)	(2.03)	(-0.08)	(2.45)	(2.66)	(2.10)	(2.02)	(3.33)
	Net job creation results											
	Size: 1 to 4	Size: 5 to 9	Size: 10 to 19	Size: 20 to 49	Size: 50 to 99	Size: 100 to 249	Size: 250 to 499	Size: 500 to 999	Size: 1000 to 2499	Size: 2500 to 4999	Size: 5000 to 9999	Size: 10000+
Log(ROA)	0.038***	0.039***	0.046***	0.030***	0.040***	0.028**	0.030	-0.013	0.006	0.050*	0.010	0.022
	(5.02)	(5.02)	(5.41)	(3.09)	(2.99)	(2.22)	(1.55)	(-0.51)	(0.28)	(1.91)	(0.43)	(1.49)
Firm Age	Net business formation results											
	Age: 0 years	Age: 1 year	Age: 2 years	Age: 3 years	Age: 4 years	Age: 5 years	Age: 6-10 years	Age: 11-15 years	Age: 16-20 years	Age: 21-25 years	Age: 26+ years	
Log(ROA)	0.015***	0.050*	0.013	0.008	0.010	0.032**	0.020**	0.019	0.008	-0.004	-0.003	
	(4.02)	(1.81)	(0.95)	(0.44)	(0.68)	(2.31)	(2.14)	(1.26)	(0.84)	(-0.21)	(-0.12)	
	Net job creation results											
	Age: 0 years	Age: 1 year	Age: 2 years	Age: 3 years	Age: 4 years	Age: 5 years	Age: 6-10 years	Age: 11-15 years	Age: 16-20 years	Age: 21-25 years	Age: 26+ years	
Log(ROA)	0.015**	0.045***	0.043**	0.005	0.029*	0.022	0.033**	0.032**	0.029*	0.026*	0.023	
	(2.39)	(3.23)	(2.47)	(0.32)	(1.85)	(1.28)	(2.56)	(2.41)	(1.78)	(1.72)	(1.10)	

Terms in brackets denote z-stats based on robust standard errors clustered in states. *, **, *** indicated significance at the 10%, 5%, 1% percent level.

Table 8: Interaction between mean personal income growth and ROA.

	(1) Net Business Formation	(2) Net Job Creation	(3) Net Job Creation Continuers	(4) Job Creation Rate	(5) Employment Growth
log(Establishments)	0.832***	0.130	-0.248**	4.008**	0.129
	(6.82)	(1.56)	(-2.09)	(2.08)	(0.26)
log(Capital-to-assets)	-0.029	-0.004	-0.018	-0.254	0.237
	(-1.17)	(-0.17)	(-0.57)	(-0.59)	(1.45)
Mean of **Δ**log(Real Personal Income)	1.812***	1.932***	2.104***	15.055***	-4.038
	(5.79)	(4.85)	(4.20)	(3.30)	(-1.35)
Δlog(HPI)	0.491***	0.578***	0.677***	3.740***	0.236
	(3.87)	(3.77)	(3.72)	(3.17)	(0.44)
log(Population)	-0.760***	-0.306***	-0.019	-6.679***	-0.168
	(-6.90)	(-3.93)	(-0.17)	(-4.41)	(-0.42)
Constant	2.403***	3.530***	3.522***	77.537***	1.266
	(3.18)	(5.65)	(3.82)	(5.11)	(0.42)
N	1783	1783	1783	1783	1783
R-sq.	0.558	0.552	0.587	0.739	0.002
Number of states	51	51	51	51	51

Terms in brackets denote z-stats based on robust standard errors clustered in states. *, **, *** indicated significance at the 10%, 5%, 1% percent level.